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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,450	03/16/2006	Isamu Yoshi	L9289.06111	1203

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EXAMINER
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YU, LIHONG

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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06/22/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,450	<b>Applicant(s)</b> YOSHI, ISAMU	
	<b>Examiner</b> LIHONG YU	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/11/2009, 2/15/2006</u> .                                   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 12, 2010 has been entered.

### *Specification*

2. The disclosure is objected to because of the following minor errors:

In the Applicant's specification, on Page 25, line 4, the Applicant recites "**demodulation section 204**". However, on Page 25, line 13, the Applicant recites "**modulation section 204**". In Applicant's Fig. 6, block **204** is labeled as "**Modulation Section**".

Appropriate correction is required.

### *Response to Arguments*

3. Applicant's arguments with respect to claim rejection under 35 USC 102 and 103 have been considered but are moot in view of the new ground(s) of rejection.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150).

**Consider claims 1 and 10:**

Li discloses a multi-carrier communication apparatus (*see Li at the abstract, where Li describes an invention for partitioning sub-carriers in an OFDMA system*) comprising:

- a superimposing section superimposing transmission symbols with a subcarrier group having a plurality of sub-carriers (*see Li at col. 5, lines 35-45, where Li describes that a base station periodically broadcasts pilot OFDM symbols to every subscriber; see col. 7, lines 36-49, where Li describes the pilot symbols cover the entire OFDM frequency bandwidth which is supported by a number of clusters; see col. 5, lines 18-27, where Li describes that a cluster contains at least one sub-carrier*);
- a control section controlling transmission power of the subcarrier group on which the transmission symbols are superimposed (*see Li at Fig. 4, and col. 9, lines 55-67 and col. 10, lines 1-2, where Li describes a power calculation processing block 402 that performs power calculations for each cluster in pilot period, and a power calculation processing block 403 that performs power calculations for each cluster in data*

*periods, a subtractor 404 that subtracts the power calculations for data periods from those in pilot periods, clusters are ordered and selected based on the power difference, and the selected cluster with desired power is sent to the base station to be allocated); and*

- a transmission section transmitting a multi-carrier signal obtained by controlling the transmission power of the subcarrier group (*see Li at col. 9, lines 65-67 and col. 10, lines 1-3, where Li describes that once the clusters have been selected, the subscriber sends a request to the base station; see Li at Fig. 1B, and col. 6, lines 7-46, where Li describes that the feedback information from the subscriber to the base station is used by the base station to select one or more clusters for the subscriber and to establish a data link between the base station and the subscriber*), wherein:
  - the control section controls the transmission power of the subcarrier group, corresponding to a difference between combined received power for the subcarrier group at a remote communication station and desired target received power (*see Li at col. 8, lines 18-47, where Li describes that the power difference is calculated at a wireless subscriber, that is a remote communication station; the power difference is between the subcarrier cluster power during the pilot period, thus the desired target received power, and the subcarrier cluster power during the data traffic period*).

However, Li does not specifically disclose that the transmission power is evenly distributed to each sub-carrier of the subcarrier group.

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In an analogous art, Wesel teaches the transmission power is evenly distributed to each sub-carrier of the subcarrier group (*see Wesel at col. 1, lines 45-49, where Wesel describes the OFDM transmission system where power is distributed evenly across the subcarriers by the transmitter*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have that the transmission power is evenly distributed to each sub-carrier of the subcarrier group, as taught by Wesel, thus allowing for minimizing sensitivity to frequency-selective disturbances in the wireless channel, as is known in the art.

**Consider claim 2:**

Li in view of Wesel discloses the multi-carrier communication apparatus according to claim 1 above. Li discloses the superimposing section comprises an acquisition section acquiring the same transmission symbols having an equal number to the number of the plurality of subcarriers of the subcarrier group; and the superimposing section superimposes the acquired same transmission symbols with the subcarrier group (*see Li at col. 7, lines 10-33, where Li describes signal spreading over multiple subcarriers, one QPSK symbol can be repeated over four subcarriers of two OFDM symbols, in other words, two OFDM symbols is transmitted by four subcarriers; see col. 16, lines 1-8, where Li describes a plurality of pilot symbols for each cluster of subcarriers*).

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6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150), as applied to claim 2 above, and further in view of Brink et al (US 6,038,450).

**Consider claim 3:**

Li in view of Wesel discloses the multi-carrier communication apparatus according to claim 2 above. Li discloses OFDM modulation (*see Li at the Abstract*).

However, Li does not specifically disclose the OFDM system comprises: a repetition section duplicating a transmission bit, and a modulation section modulating the duplicated transmission bit using an M-ary number corresponding to the number of the plurality of sub-carriers of the subcarrier group to acquire the same transmission symbols.

In an invention for OFDM modulation, Brink teaches a repetition section duplicating a transmission bit (*see Brink at Fig. 2 and col. 5, lines 11-45, where Brink describes an OFDM transmitter that has a coding block 44 that receives data stream and introduces redundancy*), and a modulation section modulating the duplicated transmission bit using an M-ary number corresponding to the number of the plurality of sub-carriers of the subcarrier group to acquire the same transmission symbols (*see Brink at Fig. 2 and col. 5, lines 11-45, where Brink describes the coded data is input to an OFDM modulation that has a symbols of  $2N_d$  bits which is used to modulate  $N_d$  sub-carriers*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have the above repetition section and modulation section, as

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taught by Brink, thus allowing for implementing a soft handover system, as discussed by Brink (*see Brink at col. 3, lines 9-12*).

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 6,904,283 B2) in view of Wesel et al (US 6,125,150), as applied to claim 2 above, and further in view of Todd (5,357,284).

**Consider claim 4:**

Li in view of Wesel discloses the multi-carrier communication apparatus according to claim 2 above. Li discloses QPSK modulation (*see Li at col. 7, lines 14-32, where Li describes quadrature phase shift keying (QPSK) modulation*).

However, Li does not specifically disclose the QPSK system comprises: a separating section separating each of the transmission symbols into an in-phase component and an orthogonal component; and substituting section substituting one of the in-phase component and the orthogonal component between the transmission symbols; and the superimposing section superimposes the transmission symbols with the subcarrier group after substituting one of the in-phase component and the orthogonal component.

In an invention for QPSK modulation, Todd teaches a separating section separating each of the transmission symbols into an in-phase component and an orthogonal component (*see Todd at Fig. 8, item 822 and col. 14, lines 6-16, where Todd describes a QPSK modulated signal is recovered into I and Q signals by mixers 802 and 803*), and substituting section substituting one of the in-phase component and the orthogonal component between the transmission symbols, and



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the superimposing section superimposes the transmission symbols with the subcarrier group after substituting one of the in-phase component and the orthogonal component (*see Todd at Fig. 8, item 822 and col. 15, lines 15-36, where Todd describes a combining logic 822 that interleaves alternate bits from I and Q data streams 824 and 826 respectively from the outputs of latches 816 and 818 to form single output bit stream for transmission*).

It would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Li, and to have the above separating section and substituting section, as taught by Todd, thus allowing for easy signal transmission, as discussed by Todd (*see Todd at col. 2, lines 25-35*).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIHONG YU whose telephone number is (571) 270-5147. The examiner can normally be reached on 8:30 am-7:00 pm Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lihong Yu/

Examiner, Art Unit 2611

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611